

SEQUENCE LISTING

<110> Vogeli, Gabriel
Wood, Linda S.
Merchant, Kalpana

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Lys Val Gly Thr Ala Thr Phe Leu Arg Gly Val Leu Leu Ile Ile Pro
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 Ser Ser Leu Val Ser Ala Phe Leu Ala Pro Ile Leu Ala Leu Glu Phe
 50 55 60
 Val Leu Gly Leu Val Gly Asn Ser Leu Ala Leu Phe Ile Phe Cys Ile
 65 70 75 80
 His Thr Arg Pro Trp Thr Ser Asn Thr Val Phe Leu Val Ser Leu Val
 85 90 95
 Ala Ala Asp Phe Leu Leu Ile Ser Asn Leu Pro Leu Arg Val Asp Tyr
 100 105 110
 Tyr Leu Leu His Glu Thr Trp Arg Phe Gly Ala Ala Ala Cys Lys Val
 115 120 125
 Asn Leu Phe Met Leu Ser Thr Asn Arg Thr Ala Ser Val Val Phe Leu
 130 135 140
 Thr Ala Ile Ala Leu Asn Arg Tyr Leu Lys Val Val Gln Pro His His
 145 150 155 160
 Val Leu Ser Arg Ala Ser Val Gly Ala Ala Ala Arg Val Ala Gly Gly
 165 170 175
 Leu Trp Val Gly Ile Leu Leu Leu Asn Gly His Leu Leu Leu Ser Thr
 180 185 190
 Phe Ser Gly Pro Ser Cys Leu Ser Tyr Arg Val Gly Thr Lys Pro Ser
 195 200 205
 Ala Ser Leu Arg Trp His Gln Ala Leu Tyr Leu Leu Glu Phe Phe Leu
 210 215 220
 Pro Leu Ala Leu Ile Leu Phe Ala Ile Val Ser Ile Gly Leu Thr Ile
 225 230 235 240
 Arg Asn Arg Gly Leu Gly Gly Gln Ala Gly Pro Gln Arg Ala Met Arg
 245 250 255
 Val Leu Ala Met Val Val Ala Val Tyr Thr Ile Cys Phe Leu Pro Ser
 260 265 270
 Ile Ile Phe Gly Met Ala Ser Met Val Ala Phe Trp Leu Ser Ala Cys
 275 280 285
 Arg Ser Leu Asp Leu Cys Thr Gln Leu Phe His Gly Ser Leu Ala Phe
 290 295 300

Thr Tyr Leu Asn Ser Val Leu Asp Pro Val Leu Tyr Cys Phe Ser Ser
305 310 315 320

Pro Asn Phe Leu His Gln Ser Arg Ala Leu Leu Gly Leu Thr Arg Gly
325 330 335

Arg Gln Gly Pro Val Ser Asp Glu Ser Ser Tyr Gln Pro Ser Arg Gln
340 345 350

Trp Arg Tyr Arg Glu Ala Ser Arg Lys Ala Glu Ala Ile Gly Lys Leu
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<213> Homo sapiens

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cctcccaaag gtgacactgg aagca atg aac acc aca gtg atg caa ggc ttc 172
Met Asn Thr Thr Val Met Gln Gly Phe
1 5

aac aga tct gag cgg tgc ccc aga gac act cgg ata gta cag ctg gta 220
Asn Arg Ser Glu Arg Cys Pro Arg Asp Thr Arg Ile Val Gln Leu Val
10 15 20 25

ttc cca gcc ctc tac aca gtg gtt ttc ttg acc ggc atc ctg ctg aat 268
Phe Pro Ala Leu Tyr Thr Val Val Phe Leu Thr Gly Ile Leu Leu Asn
30 35 40

act ttg gct ctg tgg gtg ttt gtt cac atc ccc agc tcc tcc acc ttc 316
Thr Leu Ala Leu Trp Val Phe Val His Ile Pro Ser Ser Ser Thr Phe
45 50 55

atc atc tac ctc aaa aac act ttg gtg gcc gac ttg ata atg aca ctc 364
Ile Ile Tyr Leu Lys Asn Thr Leu Val Ala Asp Leu Ile Met Thr Leu
60 65 70

atg ctt cct ttc aaa atc ctc tct gac tca cac ctg gca ccc tgg cag 412
Met Leu Pro Phe Lys Ile Leu Ser Asp Ser His Leu Ala Pro Trp Gln
75 80 85

ctc aga gct ttt gtg tgt cgt ttt tct tcg gtg ata ttt tat gag acc 460
Leu Arg Ala Phe Val Cys Arg Phe Ser Ser Val Ile Phe Tyr Glu Thr
90 95 100 105

atg tat gtg ggc atc gtg ctg tta ggg ctc ata gcc ttt gac aga ttc 508
Met Tyr Val Gly Ile Val Leu Leu Gly Leu Ile Ala Phe Asp Arg Phe
110 115 120

ctc aag atc atc aga cct ttg aga aat att ttt cta aaa aaa cct gtt	556
Leu Lys Ile Ile Arg Pro Leu Arg Asn Ile Phe Leu Lys Lys Pro Val	
125 130 135	
ttt gca aaa acg gtc tca atc ttc atc tgg gtc ttt ttg gtc ttc atc	604
Phe Ala Lys Thr Val Ser Ile Phe Ile Trp Val Phe Leu Val Phe Ile	
140 145 150	
tcc ctg cca aat atg atc ttg agc aac aag gaa gca aca cca tcg tct	652
Ser Leu Pro Asn Met Ile Leu Ser Asn Lys Glu Ala Thr Pro Ser Ser	
155 160 165	
gtg aaa aag tgt gct tcc tta aag ggg cct ctg ggg ctg aaa tgg cat	700
Val Lys Lys Cys Ala Ser Leu Lys Gly Pro Leu Gly Leu Lys Trp His	
170 175 180 185	
caa atg gta aat aac ata tgc cag ttt att ttc tgg act ggt ttt atc	748
Gln Met Val Asn Asn Ile Cys Gln Phe Ile Phe Trp Thr Gly Phe Ile	
190 195 200	
cta atg ctt gtg ttt tat gtg gtt att gca aaa aaa gta tat gat tct	796
Leu Met Leu Val Phe Tyr Val Val Ile Ala Lys Lys Val Tyr Asp Ser	
205 210 215	
tat aga aag tcc aaa agt aag gac aga aaa aac aac aaa aag ctg gaa	844
Tyr Arg Lys Ser Lys Ser Lys Asp Arg Lys Asn Asn Lys Lys Leu Glu	
220 225 230	
ggc aaa gta ttt gtt gtc gtg gct gtc ttc ttt gtg tgt ttt gct cca	892
Gly Lys Val Phe Val Val Val Ala Val Phe Phe Val Cys Phe Ala Pro	
235 240 245	
ttt cat ttt gcc aga gtt cca tat act cac agt caa acc aac aat aag	940
Phe His Phe Ala Arg Val Pro Tyr Thr His Ser Gln Thr Asn Asn Lys	
250 255 260 265	
act gac tgt aga ctg caa aat caa ctg ttt att gct aaa gaa aca act	988
Thr Asp Cys Arg Leu Gln Asn Gln Leu Phe Ile Ala Lys Glu Thr Thr	
270 275 280	
ctc ttt ttg gca gca act aac att tgt atg gat ccc tta ata tac ata	1036
Leu Phe Leu Ala Ala Thr Asn Ile Cys Met Asp Pro Leu Ile Tyr Ile	
285 290 295	
ttc tta tgt aaa aaa ttc aca gaa aag cta cca tgt atg caa ggg aga	1084
Phe Leu Cys Lys Lys Phe Thr Glu Lys Leu Pro Cys Met Gln Gly Arg	
300 305 310	
aag acc aca gca tca agc caa gaa aat cat agc agt cag aca gac aac	1132
Lys Thr Thr Ala Ser Ser Gln Glu Asn His Ser Ser Gln Thr Asp Asn	
315 320 325	
ata acc tta ggc tga caactgtaca taggggttaac ttctatttat tgatgagact	1187
Ile Thr Leu Gly	
330	
tccgtagata atgtggaaat caaatttaac caagaaaaaa agattggaac aaatgctctc	1247
ttacatttta tttatcctgg tgtccaggaa aagattatat taaatttaaa tccacataga	1307
tctattcata agctgaatga accattacct aagagaatgc aacaggatac caatggccac	1367
tagaggcata ttcttcttc tttttttttt gttaaatttc aagagcattc actttacatt	1427

tggaagact aaggggaacg gttatcctac aaacctccct tcaacacctt ttacatt 1484

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<211> 333

<212> PRT

<213> Homo sapiens

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Val Phe Leu Thr Gly Ile Leu Leu Asn Thr Leu Ala Leu Trp Val Phe
35 40 45

Val His Ile Pro Ser Ser Ser Thr Phe Ile Ile Tyr Leu Lys Asn Thr
50 55 60

Leu Val Ala Asp Leu Ile Met Thr Leu Met Leu Pro Phe Lys Ile Leu
65 70 75 80

Ser Asp Ser His Leu Ala Pro Trp Gln Leu Arg Ala Phe Val Cys Arg
85 90 95

Phe Ser Ser Val Ile Phe Tyr Glu Thr Met Tyr Val Gly Ile Val Leu
100 105 110

Leu Gly Leu Ile Ala Phe Asp Arg Phe Leu Lys Ile Ile Arg Pro Leu
115 120 125

Arg Asn Ile Phe Leu Lys Lys Pro Val Phe Ala Lys Thr Val Ser Ile
130 135 140

Phe Ile Trp Val Phe Leu Val Phe Ile Ser Leu Pro Asn Met Ile Leu
145 150 155 160

Ser Asn Lys Glu Ala Thr Pro Ser Ser Val Lys Lys Cys Ala Ser Leu
165 170 175

Lys Gly Pro Leu Gly Leu Lys Trp His Gln Met Val Asn Asn Ile Cys
180 185 190

Gln Phe Ile Phe Trp Thr Gly Phe Ile Leu Met Leu Val Phe Tyr Val
195 200 205

Val Ile Ala Lys Lys Val Tyr Asp Ser Tyr Arg Lys Ser Lys Ser Lys
210 215 220

Asp Arg Lys Asn Asn Lys Lys Leu Glu Gly Lys Val Phe Val Val Val
225 230 235 240

Ala Val Phe Phe Val Cys Phe Ala Pro Phe His Phe Ala Arg Val Pro
245 250 255

Tyr Thr His Ser Gln Thr Asn Asn Lys Thr Asp Cys Arg Leu Gln Asn
260 265 270

Gln Leu Phe Ile Ala Lys Glu Thr Thr Leu Phe Leu Ala Ala Thr Asn
275 280 285

Ile Cys Met Asp Pro Leu Ile Tyr Ile Phe Leu Cys Lys Lys Phe Thr
290 295 300

Glu Lys Leu Pro Cys Met Gln Gly Arg Lys Thr Thr Ala Ser Ser Gln
305 310 315 320

Glu Asn His Ser Ser Gln Thr Asp Asn Ile Thr Leu Gly
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<210> 9

<211> 957

<212> DNA

<213> Homo sapiens

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cta ata ggc ctc cct ggt tta gaa gag gct cag ttc tgg ttg gcc ttc 96
Leu Ile Gly Leu Pro Gly Leu Glu Glu Ala Gln Phe Trp Leu Ala Phe
20 25 30

cca ttg tgc tcc ctc tac ctt att gct gtg cta ggt aac ttg aca atc 144
Pro Leu Cys Ser Leu Tyr Leu Ile Ala Val Leu Gly Asn Leu Thr Ile
35 40 45

atc tac att gtg cgg act gag cac agc ctg cat gag ccc atg tat ata 192
Ile Tyr Ile Val Arg Thr Glu His Ser Leu His Glu Pro Met Tyr Ile
50 55 60

ttt ctt tgc atg ctt tca ggc att gac atc ctc atc tcc acc tca tcc 240
Phe Leu Cys Met Leu Ser Gly Ile Asp Ile Leu Ile Ser Thr Ser Ser
65 70 75 80

atg ccc aaa atg ctg gcc atc ttc tgg ttc aat tcc act acc atc cag 288
Met Pro Lys Met Leu Ala Ile Phe Trp Phe Asn Ser Thr Thr Ile Gln
85 90 95

ttt gat gct tgt ctg cta cag atg ttt gcc atc cac tcc tta tct ggc 336
Phe Asp Ala Cys Leu Leu Gln Met Phe Ala Ile His Ser Leu Ser Gly
100 105 110

atg gaa tcc aca gtg ctg ctg gcc atg gct ttt gac cgc tat gtg gcc 384
Met Glu Ser Thr Val Leu Leu Ala Met Ala Phe Asp Arg Tyr Val Ala
115 120 125

atc tgt cac cca ctg cgc cat gcc aca gta ctt acg ttg cct cgt gtc 432
Ile Cys His Pro Leu Arg His Ala Thr Val Leu Thr Leu Pro Arg Val
130 135 140

acc aaa att ggt gtg gct gct gtg gtg cgg ggg gct gca ctg atg gca 480
Thr Lys Ile Gly Val Ala Ala Val Val Arg Gly Ala Ala Leu Met Ala
145 150 155 160

ccc ctt cct gtc ttc atc aag cag ctg ccc ttc tgc cgc tcc aat atc 528
Pro Leu Pro Val Phe Ile Lys Gln Leu Pro Phe Cys Arg Ser Asn Ile
165 170 175

ctt tcc cat tcc tac tgc cta cac caa gat gtc atg aag ctg gcc tgt 576
Leu Ser His Ser Tyr Cys Leu His Gln Asp Val Met Lys Leu Ala Cys
180 185 190

gat gat atc cgg gtc aat gtc gtc tat ggc ctt atc gtc atc atc tcc 624
Asp Asp Ile Arg Val Asn Val Val Tyr Gly Leu Ile Val Ile Ile Ser
195 200 205

gcc att ggc ctg gac tca ctt ctc atc tcc ttc tca tat ctg ctt att 672
Ala Ile Gly Leu Asp Ser Leu Leu Ile Ser Phe Ser Tyr Leu Leu Ile
210 215 220

ctt aag act gtg ttg ggc ttg aca cgt gaa gcc cag gcc aag gca ttt 720
Leu Lys Thr Val Leu Gly Leu Thr Arg Glu Ala Gln Ala Lys Ala Phe
225 230 235 240

ggc act tgc gtc tct cat gtg tgt gct gtg ttc ata ttc tat gta cct 768
Gly Thr Cys Val Ser His Val Cys Ala Val Phe Ile Phe Tyr Val Pro
245 250 255

ttc att gga ttg tcc atg gtg cat cgc ttt agc aag cgg cgt gac tct 816
Phe Ile Gly Leu Ser Met Val His Arg Phe Ser Lys Arg Arg Asp Ser
260 265 270

cgg ctg ccc gtc atc ttg gcc aat atc tat ctg ctg gtt cct cct gtg 864
Pro Leu Pro Val Ile Leu Ala Asn Ile Tyr Leu Leu Val Pro Pro Val
275 280 285

ctc aac cca att gtc tat gga gtg aag aca aag gag att cga cag cgc 912
Leu Asn Pro Ile Val Tyr Gly Val Lys Thr Lys Glu Ile Arg Gln Arg
290 295 300

atc ctt cga ctt ttc cat gtg gcc aca cac gct tca gag ccc tag 957
Ile Leu Arg Leu Phe His Val Ala Thr His Ala Ser Glu Pro
305 310 315

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Pro Leu Cys Ser Leu Tyr Leu Ile Ala Val Leu Gly Asn Leu Thr Ile
35 40 45

Ile Tyr Ile Val Arg Thr Glu His Ser Leu His Glu Pro Met Tyr Ile
50 55 60

Phe Leu Cys Met Leu Ser Gly Ile Asp Ile Leu Ile Ser Thr Ser Ser
65 70 75 80

Met Pro Lys Met Leu Ala Ile Phe Trp Phe Asn Ser Thr Thr Ile Gln
85 90 95

Phe Asp Ala Cys Leu Leu Gln Met Phe Ala Ile His Ser Leu Ser Gly
100 105 110

Met	Glu	Ser	Thr	Val	Leu	Leu	Ala	Met	Ala	Phe	Asp	Arg	Tyr	Val	Ala	
		115					120					125				
Ile	Cys	His	Pro	Leu	Arg	His	Ala	Thr	Val	Leu	Thr	Leu	Pro	Arg	Val	
	130					135					140					
Thr	Lys	Ile	Gly	Val	Ala	Ala	Val	Val	Arg	Gly	Ala	Ala	Leu	Met	Ala	
145					150					155					160	
Pro	Leu	Pro	Val	Phe	Ile	Lys	Gln	Leu	Pro	Phe	Cys	Arg	Ser	Asn	Ile	
				165					170					175		
Leu	Ser	His	Ser	Tyr	Cys	Leu	His	Gln	Asp	Val	Met	Lys	Leu	Ala	Cys	
			180					185					190			
Asp	Asp	Ile	Arg	Val	Asn	Val	Val	Tyr	Gly	Leu	Ile	Val	Ile	Ile	Ser	
		195					200					205				
Ala	Ile	Gly	Leu	Asp	Ser	Leu	Leu	Ile	Ser	Phe	Ser	Tyr	Leu	Leu	Ile	
	210					215					220					
Leu	Lys	Thr	Val	Leu	Gly	Leu	Thr	Arg	Glu	Ala	Gln	Ala	Lys	Ala	Phe	
225					230					235					240	
Gly	Thr	Cys	Val	Ser	His	Val	Cys	Ala	Val	Phe	Ile	Phe	Tyr	Val	Pro	
			245						250					255		
Phe	Ile	Gly	Leu	Ser	Met	Val	His	Arg	Phe	Ser	Lys	Arg	Arg	Asp	Ser	
		260						265					270			
Pro	Leu	Pro	Val	Ile	Leu	Ala	Asn	Ile	Tyr	Leu	Leu	Val	Pro	Pro	Val	
		275					280					285				
Leu	Asn	Pro	Ile	Val	Tyr	Gly	Val	Lys	Thr	Lys	Glu	Ile	Arg	Gln	Arg	
	290					295					300					
Ile	Leu	Arg	Leu	Phe	His	Val	Ala	Thr	His	Ala	Ser	Glu	Pro			
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Met	Glu	Ser	Glu	Asn	Arg	Arg	Val	Ile	Arg	Glu	Phe	Ile	Leu	Leu	Gly		
1				5					10					15			
ctg	acc	cag	tct	caa	gat	att	cag	ctc	ctg	gtc	ttt	gtg	cta	gtt	tta		96
Leu	Thr	Gln	Ser	Gln	Asp	Ile	Gln	Leu	Leu	Val	Phe	Val	Leu	Val	Leu		
			20					25					30				
ata	ttc	tac	ttc	atc	atc	ctc	cct	gga	aat	ttt	ctc	att	att	ttc	acc		144
Ile	Phe	Tyr	Phe	Ile	Ile	Leu	Pro	Gly	Asn	Phe	Leu	Ile	Ile	Phe	Thr		
		35					40					45					
ata	aag	tca	gac	cct	ggg	ctc	aca	gcc	ccc	ctc	tat	ttc	ttt	ctg	ggc		192
Ile	Lys	Ser	Asp	Pro	Gly	Leu	Thr	Ala	Pro	Leu	Tyr	Phe	Phe	Leu	Gly		

50	55	60	
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Asn Leu Ala Phe Leu Asp Ala Ser Tyr Ser Phe Ile Val Ala Pro Arg			
65 70 75 80			
atg ttg gtg gac ttc ctc tct gcg aag aag ata atc tcc tac aga ggc	288		
Met Leu Val Asp Phe Leu Ser Ala Lys Lys Ile Ile Ser Tyr Arg Gly			
85 90 95			
tgc atc act cag ctc ttt ttc ttg cac ttc ctt gga gga ggg gag gga	336		
Cys Ile Thr Gln Leu Phe Phe Leu His Phe Leu Gly Gly Gly Glu Gly			
100 105 110			
tta ctc ctt gtt gtg atg gcc ttt gac cgc tac atc gcc atc tgc cgg	384		
Leu Leu Leu Val Val Met Ala Phe Asp Arg Tyr Ile Ala Ile Cys Arg			
115 120 125			
cct ctg cac tat cct act gtc atg aac cct aga acc tgc tat gca atg	432		
Pro Leu His Tyr Pro Thr Val Met Asn Pro Arg Thr Cys Tyr Ala Met			
130 135 140			
atg ttg gct ctg tgg ctt ggg ggt ttt gtc cac tcc att atc cag gtg	480		
Met Leu Ala Leu Trp Leu Gly Gly Phe Val His Ser Ile Ile Gln Val			
145 150 155 160			
gtc ctc atc ctc cgc ttg cct ttt tgt ggc cca aac cag ctg gac aac	528		
Val Leu Ile Leu Arg Leu Pro Phe Cys Gly Pro Asn Gln Leu Asp Asn			
165 170 175			
ttc ttc tgt gat gtc cca cag gtc atc aag ctg gcc tgc acc gac aca	576		
Phe Phe Cys Asp Val Pro Gln Val Ile Lys Leu Ala Cys Thr Asp Thr			
180 185 190			
ttt gtg gtg gag ctt ctg atg gtc ttc aac agt ggc ctg atg aca ctc	624		
Phe Val Val Glu Leu Leu Met Val Phe Asn Ser Gly Leu Met Thr Leu			
195 200 205			
ctg tgc ttt ctg ggg ctt ctg gcc tcc tat gca gtc att ctt tgt cgc	672		
Leu Cys Phe Leu Gly Leu Leu Ala Ser Tyr Ala Val Ile Leu Cys Arg			
210 215 220			
ata cga ggg tct tct tct gag gca aaa aac aag gcc atg tcc acg tgc	720		
Ile Arg Gly Ser Ser Ser Glu Ala Lys Asn Lys Ala Met Ser Thr Cys			
225 230 235 240			
atc acc cat atc att gtt ata ttc ttc atg ttt gga cct ggc atc ttc	768		
Ile Thr His Ile Ile Val Ile Phe Phe Met Phe Gly Pro Gly Ile Phe			
245 250 255			
atc tac acg cgc ccc ttc agg gct ttc cca gct gac aag gtg gtt tct	816		
Ile Tyr Thr Arg Pro Phe Arg Ala Phe Pro Ala Asp Lys Val Val Ser			
260 265 270			
ctc ttc cac aca gtg att ttt cct ttg ttg aat cct gtc att tat acc	864		
Leu Phe His Thr Val Ile Phe Pro Leu Leu Asn Pro Val Ile Tyr Thr			
275 280 285			
ctt cgc aac cag gaa gtg aaa gct tcc atg aaa aag gtg ttt aat aag	912		
Leu Arg Asn Gln Glu Val Lys Ala Ser Met Lys Lys Val Phe Asn Lys			
290 295 300			
cac ata gcc tgaaaaaggcgcaaaaaaaa aaaagaataa aaatagactg	961		

His Ile Ala
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tagaattttt aaaaaaaaaa aaaaaaaaaa aaaa

995

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Ile Phe Tyr Phe Ile Ile Leu Pro Gly Asn Phe Leu Ile Ile Phe Thr
35 40 45
Ile Lys Ser Asp Pro Gly Leu Thr Ala Pro Leu Tyr Phe Phe Leu Gly
50 55 60
Asn Leu Ala Phe Leu Asp Ala Ser Tyr Ser Phe Ile Val Ala Pro Arg
65 70 75 80
Met Leu Val Asp Phe Leu Ser Ala Lys Lys Ile Ile Ser Tyr Arg Gly
85 90 95
Cys Ile Thr Gln Leu Phe Phe Leu His Phe Leu Gly Gly Gly Glu Gly
100 105 110
Leu Leu Leu Val Val Met Ala Phe Asp Arg Tyr Ile Ala Ile Cys Arg
115 120 125
Pro Leu His Tyr Pro Thr Val Met Asn Pro Arg Thr Cys Tyr Ala Met
130 135 140
Met Leu Ala Leu Trp Leu Gly Gly Phe Val His Ser Ile Ile Gln Val
145 150 155 160
Val Leu Ile Leu Arg Leu Pro Phe Cys Gly Pro Asn Gln Leu Asp Asn
165 170 175
Phe Phe Cys Asp Val Pro Gln Val Ile Lys Leu Ala Cys Thr Asp Thr
180 185 190
Phe Val Val Glu Leu Leu Met Val Phe Asn Ser Gly Leu Met Thr Leu
195 200 205
Leu Cys Phe Leu Gly Leu Leu Ala Ser Tyr Ala Val Ile Leu Cys Arg
210 215 220
Ile Arg Gly Ser Ser Ser Glu Ala Lys Asn Lys Ala Met Ser Thr Cys
225 230 235 240
Ile Thr His Ile Ile Val Ile Phe Phe Met Phe Gly Pro Gly Ile Phe
245 250 255
Ile Tyr Thr Arg Pro Phe Arg Ala Phe Pro Ala Asp Lys Val Val Ser
260 265 270

Leu Phe His Thr Val Ile Phe Pro Leu Leu Asn Pro Val Ile Tyr Thr
275 280 285

Leu Arg Asn Gln Glu Val Lys Ala Ser Met Lys Lys Val Phe Asn Lys
290 295 300

His Ile Ala
305

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agaaaagagg aagcatgact gcagatcaga tcagttctct ttgtggatta ttttttcagt 180
aaaatgtatg gatctatctt ttccttggtc ttatatctag atcatgagac ttgactgagg 240
ctgtatcctt atcctccatc catct atg gcg aac tat agc cat gca gct gac 292
Met Ala Asn Tyr Ser His Ala Ala Asp
1 5

aac att ttg caa aat ctc tcg cct cta aca gcc ttt ctg aaa ctg act 340
Asn Ile Leu Gln Asn Leu Ser Pro Leu Thr Ala Phe Leu Lys Leu Thr
10 15 20 25

tcc ttg ggt ttc ata ata gga gtc agc gtg gtg ggc aac ctc ctg atc 388
Ser Leu Gly Phe Ile Ile Gly Val Ser Val Val Gly Asn Leu Leu Ile
30 35 40

tcc att ttg cta gtg aaa gat aag acc ttg cat aga gca cct tac tac 436
Ser Ile Leu Leu Val Lys Asp Lys Thr Leu His Arg Ala Pro Tyr Tyr
45 50 55

ttc ctg ttg gat ctt tgc tgt tca gat atc ctc aga tct gca att tgt 484
Phe Leu Leu Asp Leu Cys Cys Ser Asp Ile Leu Arg Ser Ala Ile Cys
60 65 70

ttc cca ttt gtg ttc aac tct gtc aaa aat ggt tct acc tgg act tat	532
Phe Pro Phe Val Phe Asn Ser Val Lys Asn Gly Ser Thr Trp Thr Tyr	
75 80 85	
ggg act ctg act tgc aaa gtg att gcc ttt ctg ggg gtt ttg tcc tgt	580
Gly Thr Leu Thr Cys Lys Val Ile Ala Phe Leu Gly Val Leu Ser Cys	
90 95 100 105	
ttc cac act gct ttc atg ctc ttc tgc atc agt gtc acc aga tat tta	628
Phe His Thr Ala Phe Met Leu Phe Cys Ile Ser Val Thr Arg Tyr Leu	
110 115 120	
gct atc gcc cat cac cgc ttc tat aca aag agg ctg acc ttt tgg acg	676
Ala Ile Ala His His Arg Phe Tyr Thr Lys Arg Leu Thr Phe Trp Thr	
125 130 135	
tgt ctg gct gtg atc tgt atg gtg tgg act ctg tct gtg gcc atg gca	724
Cys Leu Ala Val Ile Cys Met Val Trp Thr Leu Ser Val Ala Met Ala	
140 145 150	
ttt ccc ccg gtt tta gac gtg ggc act tac tca ttc att agg gag gaa	772
Phe Pro Pro Val Leu Asp Val Gly Thr Tyr Ser Phe Ile Arg Glu Glu	
155 160 165	
gat caa tgc acc ttc caa cac cgc tcc ttc agg gct aat gat tcc tta	820
Asp Gln Cys Thr Phe Gln His Arg Ser Phe Arg Ala Asn Asp Ser Leu	
170 175 180 185	
gga ttt atg ctg ctt ctt gct ctc atc ctc cta gcc aca cag ctt gtc	868
Gly Phe Met Leu Leu Ala Leu Ile Leu Leu Ala Thr Gln Leu Val	
190 195 200	
tac ctc aag ctg ata ttt ttc gtc cac gat cga aga aaa atg aag cca	916
Tyr Leu Lys Leu Ile Phe Phe Val His Asp Arg Arg Lys Met Lys Pro	
205 210 215	
gtc cag ttt gta gca gca gtc agc cag aac tgg act ttt cat ggt cct	964
Val Gln Phe Val Ala Ala Val Ser Gln Asn Trp Thr Phe His Gly Pro	
220 225 230	
gga gcc agt ggc cag gca gct gcc aat tgg cta gca gga ttt gga agg	1012
Gly Ala Ser Gly Gln Ala Ala Asn Trp Leu Ala Gly Phe Gly Arg	
235 240 245	
ggt ccc aca cca ccc acc ttg ctg ggc atc agg caa aat gca aac acc	1060
Gly Pro Thr Pro Pro Thr Leu Leu Gly Ile Arg Gln Asn Ala Asn Thr	
250 255 260 265	
aca ggc aga aga agg cta ttg gtc tta gac gag ttc aaa atg gag aaa	1108
Thr Gly Arg Arg Arg Leu Leu Val Leu Asp Glu Phe Lys Met Glu Lys	
270 275 280	
aga atc agc aga atg ttc tat ata atg act ttt ctg ttt cta acc ttg	1156
Arg Ile Ser Arg Met Phe Tyr Ile Met Thr Phe Leu Phe Leu Thr Leu	
285 290 295	
tgg ggc ccc tac ctg gtg gcc tgt tat tgg aga gtt ttt gca aga ggg	1204
Trp Gly Pro Tyr Leu Val Ala Cys Tyr Trp Arg Val Phe Ala Arg Gly	
300 305 310	
cct gta gta cca ggg gga ttt cta aca gct gct gtc tgg atg agt ttt	1252

Pro Val Val Pro Gly Gly Phe Leu Thr Ala Ala Val Trp Met Ser Phe
315 320 325

gcc caa gca gga atc aat cct ttt gtc tgc att ttc tca aac agg gag 1300
Ala Gln Ala Gly Ile Asn Pro Phe Val Cys Ile Phe Ser Asn Arg Glu
330 335 340 345

ctg agg cgc tgt ttc agc aca acc ctt ctt tac tgc aga aaa tcc agg 1348
Leu Arg Arg Cys Phe Ser Thr Thr Leu Leu Tyr Cys Arg Lys Ser Arg
350 355 360

tta cca agg gaa cct tac tgt gtt ata tgagg 1380
Leu Pro Arg Glu Pro Tyr Cys Val Ile
365 370

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<211> 370
<212> PRT
<213> Homo sapiens

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1 5 10 15

Pro Leu Thr Ala Phe Leu Lys Leu Thr Ser Leu Gly Phe Ile Ile Gly
20 25 30

Val Ser Val Val Gly Asn Leu Leu Ile Ser Ile Leu Leu Val Lys Asp
35 40 45

Lys Thr Leu His Arg Ala Pro Tyr Tyr Phe Leu Leu Asp Leu Cys Cys
50 55 60

Ser Asp Ile Leu Arg Ser Ala Ile Cys Phe Pro Phe Val Phe Asn Ser
65 70 75 80

Val Lys Asn Gly Ser Thr Trp Thr Tyr Gly Thr Leu Thr Cys Lys Val
85 90 95

Ile Ala Phe Leu Gly Val Leu Ser Cys Phe His Thr Ala Phe Met Leu
100 105 110

Phe Cys Ile Ser Val Thr Arg Tyr Leu Ala Ile Ala His His Arg Phe
115 120 125

Tyr Thr Lys Arg Leu Thr Phe Trp Thr Cys Leu Ala Val Ile Cys Met
130 135 140

Val Trp Thr Leu Ser Val Ala Met Ala Phe Pro Pro Val Leu Asp Val
145 150 155 160

Gly Thr Tyr Ser Phe Ile Arg Glu Glu Asp Gln Cys Thr Phe Gln His
165 170 175

Arg Ser Phe Arg Ala Asn Asp Ser Leu Gly Phe Met Leu Leu Leu Ala
180 185 190

Leu Ile Leu Leu Ala Thr Gln Leu Val Tyr Leu Lys Leu Ile Phe Phe
195 200 205

Val His Asp Arg Arg Lys Met Lys Pro Val Gln Phe Val Ala Ala Val

210	215	220
Ser Gln Asn Trp Thr Phe His Gly Pro Gly Ala Ser Gly Gln Ala Ala 225 230 235 240		
Ala Asn Trp Leu Ala Gly Phe Gly Arg Gly Pro Thr Pro Pro Thr Leu 245 250 255		
Leu Gly Ile Arg Gln Asn Ala Asn Thr Thr Gly Arg Arg Arg Leu Leu 260 265 270		
Val Leu Asp Glu Phe Lys Met Glu Lys Arg Ile Ser Arg Met Phe Tyr 275 280 285		
Ile Met Thr Phe Leu Phe Leu Thr Leu Trp Gly Pro Tyr Leu Val Ala 290 295 300		
Cys Tyr Trp Arg Val Phe Ala Arg Gly Pro Val Val Pro Gly Gly Phe 305 310 315 320		
Leu Thr Ala Ala Val Trp Met Ser Phe Ala Gln Ala Gly Ile Asn Pro 325 330 335		
Phe Val Cys Ile Phe Ser Asn Arg Glu Leu Arg Arg Cys Phe Ser Thr 340 345 350		
Thr Leu Leu Tyr Cys Arg Lys Ser Arg Leu Pro Arg Glu Pro Tyr Cys 355 360 365		
Val Ile 370		

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 <213> Homo sapiens

<220>
 <221> CDS
 <222> (1)..(1188)

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cag tac tgt ggg tat gca cca cat gtt cgc agc tgt aaa cca aac act Gln Tyr Cys Gly Tyr Ala Pro His Val Arg Ser Cys Lys Pro Asn Thr 20 25 30 96	
gat gga att tca tct cta gag aat ctc ttg gca agc att att cag aga Asp Gly Ile Ser Ser Leu Glu Asn Leu Leu Ala Ser Ile Ile Gln Arg 35 40 45 144	
gta ttt gtc tgg gtt gta tct gca gtt acc tgc ttt gga aac att ttt Val Phe Val Trp Val Val Ser Ala Val Thr Cys Phe Gly Asn Ile Phe 50 55 60 192	
gtc att tgc atg cga cct tat atc agg tct gag aac aag ctg tat gcc Val Ile Cys Met Arg Pro Tyr Ile Arg Ser Glu Asn Lys Leu Tyr Ala 65 70 75 80 240	

atg tca atc att tct ctc tgc tgt gcc gac tgc tta atg gga ata tat	288
Met Ser Ile Ile Ser Leu Cys Cys Ala Asp Cys Leu Met Gly Ile Tyr	
85 90 95	
tta ttc gtg atc gga ggc ttt gac cta aag ttt cgt gga gaa tac aat	336
Leu Phe Val Ile Gly Gly Phe Asp Leu Lys Phe Arg Gly Glu Tyr Asn	
100 105 110	
aag cat gcg cag ctg tgg atg gag agt act cat tgt cag ctt gta gga	384
Lys His Ala Gln Leu Trp Met Glu Ser Thr His Cys Gln Leu Val Gly	
115 120 125	
tct ttg gcc att ctg tcc aca gaa gta tca gtt tta ctg tta aca ttt	432
Ser Leu Ala Ile Leu Ser Thr Glu Val Ser Val Leu Leu Leu Thr Phe	
130 135 140	
ctg aca ttg gaa aaa tac atc tgc att gtc tat cct ttt aga tgt gtg	480
Leu Thr Leu Glu Lys Tyr Ile Cys Ile Val Tyr Pro Phe Arg Cys Val	
145 150 155 160	
aga cct gga aaa tgc aga aca att aca gtt ctg att ctc att tgg att	528
Arg Pro Gly Lys Cys Arg Thr Ile Thr Val Leu Ile Leu Ile Trp Ile	
165 170 175	
act ggt ttt ata gtg gct ttc att cca ttg agc aat aag gaa ttt ttc	576
Thr Gly Phe Ile Val Ala Phe Ile Pro Leu Ser Asn Lys Glu Phe Phe	
180 185 190	
aaa aac tac tat ggc acc aat gga gta tgc ttc cct ctt cat tca gaa	624
Lys Asn Tyr Tyr Gly Thr Asn Gly Val Cys Phe Pro Leu His Ser Glu	
195 200 205	
gat aca gaa agt att gga gcc cag att tat tca gtg gca att ttt ctt	672
Asp Thr Glu Ser Ile Gly Ala Gln Ile Tyr Ser Val Ala Ile Phe Leu	
210 215 220	
ggt att aat ttg gcc gca ttt atc atc ata gtt ttt tcc tat gga agc	720
Gly Ile Asn Leu Ala Ala Phe Ile Ile Ile Val Phe Ser Tyr Gly Ser	
225 230 235 240	
atg ttt tat agt gtt cat caa agt gcc ata aca gca act gaa ata cgg	768
Met Phe Tyr Ser Val His Gln Ser Ala Ile Thr Ala Thr Glu Ile Arg	
245 250 255	
aat caa gtt aaa aaa gag atg atc ctt gcc aaa cgt ttt ttc ttt ata	816
Asn Gln Val Lys Lys Glu Met Ile Leu Ala Lys Arg Phe Phe Phe Ile	
260 265 270	
gta ttt act gat gca tta tgc tgg ata ccc att ttt gta gtg aaa ttt	864
Val Phe Thr Asp Ala Leu Cys Trp Ile Pro Ile Phe Val Val Lys Phe	
275 280 285	
ctt tca ctg ctt cag gta gaa ata cca ggt acc ata acc tct tgg gta	912
Leu Ser Leu Leu Gln Val Glu Ile Pro Gly Thr Ile Thr Ser Trp Val	
290 295 300	
gtg att ttt att ctg ccc att aac agt gct ttg aac cca att ctc tat	960
Val Ile Phe Ile Leu Pro Ile Asn Ser Ala Leu Asn Pro Ile Leu Tyr	
305 310 315 320	
act ctg acc aca aga cca ttt aaa gaa atg att cat cgg ttt tgg tat	1008
Thr Leu Thr Thr Arg Pro Phe Lys Glu Met Ile His Arg Phe Trp Tyr	

325	330	335	
aac tac aga caa aga aaa tct atg gac agc aaa ggt cag aaa aca tat			1056
Asn Tyr Arg Gln Arg Lys Ser Met Asp Ser Lys Gly Gln Lys Thr Tyr			
340	345	350	
gct cca tca ttc atc tgg gtg gaa atg tgg cca ctg cag gag atg cca			1104
Ala Pro Ser Phe Ile Trp Val Glu Met Trp Pro Leu Gln Glu Met Pro			
355	360	365	
cct gag tta atg aag ccg gac ctt ttc aca tac ccc tgt gaa atg tca			1152
Pro Glu Leu Met Lys Pro Asp Leu Phe Thr Tyr Pro Cys Glu Met Ser			
370	375	380	
ctg att tct caa tca acg aga ctc aat tcc tat tca tga			1191
Leu Ile Ser Gln Ser Thr Arg Leu Asn Ser Tyr Ser			
385	390	395	
<210> 16			
<211> 396			
<212> PRT			
<213> Homo sapiens			
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Met Phe Arg Pro Leu Val Asn Leu Ser His Ile Tyr Phe Lys Lys Phe			
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Gln Tyr Cys Gly Tyr Ala Pro His Val Arg Ser Cys Lys Pro Asn Thr			
20	25	30	
Asp Gly Ile Ser Ser Leu Glu Asn Leu Leu Ala Ser Ile Ile Gln Arg			
35	40	45	
Val Phe Val Trp Val Val Ser Ala Val Thr Cys Phe Gly Asn Ile Phe			
50	55	60	
Val Ile Cys Met Arg Pro Tyr Ile Arg Ser Glu Asn Lys Leu Tyr Ala			
65	70	75	80
Met Ser Ile Ile Ser Leu Cys Cys Ala Asp Cys Leu Met Gly Ile Tyr			
85	90	95	
Leu Phe Val Ile Gly Gly Phe Asp Leu Lys Phe Arg Gly Glu Tyr Asn			
100	105	110	
Lys His Ala Gln Leu Trp Met Glu Ser Thr His Cys Gln Leu Val Gly			
115	120	125	
Ser Leu Ala Ile Leu Ser Thr Glu Val Ser Val Leu Leu Leu Thr Phe			
130	135	140	
Leu Thr Leu Glu Lys Tyr Ile Cys Ile Val Tyr Pro Phe Arg Cys Val			
145	150	155	160
Arg Pro Gly Lys Cys Arg Thr Ile Thr Val Leu Ile Leu Ile Trp Ile			
165	170	175	
Thr Gly Phe Ile Val Ala Phe Ile Pro Leu Ser Asn Lys Glu Phe Phe			
180	185	190	
Lys Asn Tyr Tyr Gly Thr Asn Gly Val Cys Phe Pro Leu His Ser Glu			
195	200	205	

Asp Thr Glu Ser Ile Gly Ala Gln Ile Tyr Ser Val Ala Ile Phe Leu
 210 215 220

Gly Ile Asn Leu Ala Ala Phe Ile Ile Ile Val Phe Ser Tyr Gly Ser
 225 230 235 240

Met Phe Tyr Ser Val His Gln Ser Ala Ile Thr Ala Thr Glu Ile Arg
 245 250 255

Asn Gln Val Lys Lys Glu Met Ile Leu Ala Lys Arg Phe Phe Phe Ile
 260 265 270

Val Phe Thr Asp Ala Leu Cys Trp Ile Pro Ile Phe Val Val Lys Phe
 275 280 285

Leu Ser Leu Leu Gln Val Glu Ile Pro Gly Thr Ile Thr Ser Trp Val
 290 295 300

Val Ile Phe Ile Leu Pro Ile Asn Ser Ala Leu Asn Pro Ile Leu Tyr
 305 310 315 320

Thr Leu Thr Thr Arg Pro Phe Lys Glu Met Ile His Arg Phe Trp Tyr
 325 330 335

Asn Tyr Arg Gln Arg Lys Ser Met Asp Ser Lys Gly Gln Lys Thr Tyr
 340 345 350

Ala Pro Ser Phe Ile Trp Val Glu Met Trp Pro Leu Gln Glu Met Pro
 355 360 365

Pro Glu Leu Met Lys Pro Asp Leu Phe Thr Tyr Pro Cys Glu Met Ser
 370 375 380

Leu Ile Ser Gln Ser Thr Arg Leu Asn Ser Tyr Ser
 385 390 395

<210> 17
 <211> 1164
 <212> DNA
 <213> Homo sapiens

<220>
 <221> CDS
 <222> (13)..(1089)

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 Met Gly Phe Asn Leu Thr Leu Ala Lys Leu Pro Asn Asn
 1 5 10

gag ctg cac ggc caa gag agt cac aat tca ggc aac agg agc gac ggg 99
 Glu Leu His Gly Gln Glu Ser His Asn Ser Gly Asn Arg Ser Asp Gly
 15 20 25

cca gga aag aac acc acc ctt cac aat gaa ttt gac aca att gtc ttg 147
 Pro Gly Lys Asn Thr Thr Leu His Asn Glu Phe Asp Thr Ile Val Leu
 30 35 40 45

cca gtg ctt tat ctc att ata ttt gtg gca agc atc ttg ctg aat ggt 195
 Pro Val Leu Tyr Leu Ile Ile Phe Val Ala Ser Ile Leu Leu Asn Gly
 50 55 60

tta gca gtg tgg atc ttc ttc cac att agg aat aaa acc agc ttc ata 243

Leu	Ala	Val	Trp	Ile	Phe	Phe	His	Ile	Arg	Asn	Lys	Thr	Ser	Phe	Ile		
			65					70					75				
ttc	tat	ctc	aaa	aac	ata	gtg	gtt	gca	gac	ctc	ata	atg	acg	ctg	aca	291	
Phe	Tyr	Leu	Lys	Asn	Ile	Val	Val	Ala	Asp	Leu	Ile	Met	Thr	Leu	Thr		
		80					85					90					
ttt	cca	ttt	cga	ata	gtc	cat	gat	gca	gga	ttt	gga	cct	tgg	tac	ttc	339	
Phe	Pro	Phe	Arg	Ile	Val	His	Asp	Ala	Gly	Phe	Gly	Pro	Trp	Tyr	Phe		
	95					100					105						
aag	ttt	att	ctc	tgc	aga	tac	act	tca	gtt	ttg	ttt	tat	gca	aac	atg	387	
Lys	Phe	Ile	Leu	Cys	Arg	Tyr	Thr	Ser	Val	Leu	Phe	Tyr	Ala	Asn	Met		
110					115					120					125		
tat	act	tcc	atc	gtg	ttc	ctt	ggg	ctg	ata	agc	att	gat	cgc	tat	ctg	435	
Tyr	Thr	Ser	Ile	Val	Phe	Leu	Gly	Leu	Ile	Ser	Ile	Asp	Arg	Tyr	Leu		
			130					135						140			
aag	gtg	gtc	aag	cca	ttt	ggg	gac	tct	cgg	atg	tac	agc	ata	acc	ttc	483	
Lys	Val	Val	Lys	Pro	Phe	Gly	Asp	Ser	Arg	Met	Tyr	Ser	Ile	Thr	Phe		
			145					150					155				
acg	aag	gtt	tta	tct	gtt	tgt	gtt	tgg	gtg	atc	atg	gct	gtt	ttg	tct	531	
Thr	Lys	Val	Leu	Ser	Val	Cys	Val	Trp	Val	Ile	Met	Ala	Val	Leu	Ser		
		160					165					170					
ttg	cca	aac	atc	atc	ctg	aca	aat	ggg	cag	cca	aca	gag	gac	aat	atc	579	
Leu	Pro	Asn	Ile	Ile	Leu	Thr	Asn	Gly	Gln	Pro	Thr	Glu	Asp	Asn	Ile		
	175					180					185						
cat	gac	tgc	tca	aaa	ctt	aaa	agt	cct	ttg	ggg	gtc	aaa	tgg	cat	acg	627	
His	Asp	Cys	Ser	Lys	Leu	Lys	Ser	Pro	Leu	Gly	Val	Lys	Trp	His	Thr		
190					195					200					205		
gca	gtc	acc	tat	gtg	aac	agc	tgc	ttg	ttt	gtg	gcc	gtg	ctg	gtg	att	675	
Ala	Val	Thr	Tyr	Val	Asn	Ser	Cys	Leu	Phe	Val	Ala	Val	Leu	Val	Ile		
				210				215					220				
ctg	atc	gga	tgt	tac	ata	gcc	ata	tcc	agg	tac	atc	cac	aaa	tcc	agc	723	
Leu	Ile	Gly	Cys	Tyr	Ile	Ala	Ile	Ser	Arg	Tyr	Ile	His	Lys	Ser	Ser		
			225					230					235				
agg	caa	ttc	ata	agt	cag	tca	agc	cga	aag	cga	aaa	cat	aac	cag	agc	771	
Arg	Gln	Phe	Ile	Ser	Gln	Ser	Ser	Arg	Lys	Arg	Lys	His	Asn	Gln	Ser		
		240					245					250					
atc	agg	gtt	gtt	gtg	gct	gtg	ttt	ttt	acc	tgc	ttt	cta	cca	tat	cac	819	
Ile	Arg	Val	Val	Val	Ala	Val	Phe	Phe	Thr	Cys	Phe	Leu	Pro	Tyr	His		
	255					260					265						
ttg	tgc	aga	att	cct	ttt	act	ttt	agt	cac	tta	gac	agg	ctt	tta	gat	867	
Leu	Cys	Arg	Ile	Pro	Phe	Thr	Phe	Ser	His	Leu	Asp	Arg	Leu	Leu	Asp		
270					275					280					285		
gaa	tct	gca	caa	aaa	atc	cta	tat	tac	tgc	aaa	gaa	att	aca	ctt	ttc	915	
Glu	Ser	Ala	Gln	Lys	Ile	Leu	Tyr	Tyr	Cys	Lys	Glu	Ile	Thr	Leu	Phe		
				290					295					300			
ttg	tct	gcg	tgt	aat	gtt	tgc	ctg	gat	cca	ata	att	tac	ttt	ttc	atg	963	
Leu	Ser	Ala	Cys	Asn	Val	Cys	Leu	Asp	Pro	Ile	Ile	Tyr	Phe	Phe	Met		
			305					310					315				

tgt agg tca ttt tca aga agg ctg ttc aaa aaa tca aat atc aga acc 1011
Cys Arg Ser Phe Ser Arg Arg Leu Phe Lys Lys Ser Asn Ile Arg Thr
320 325 330

agg agt gaa agc atc aga tca ctg caa agt gtg aga aga tcg gaa gtt 1059
Arg Ser Glu Ser Ile Arg Ser Leu Gln Ser Val Arg Arg Ser Glu Val
335 340 345

ctc ata tat tat gat tat act gat gtg tag gccttttatt gtttggttga 1109
Leu Ile Tyr Tyr Asp Tyr Thr Asp Val
350 355

atcgatatgt acaaagtgt aataaatgtt tcttttcatt aaaaaaaaaa aaaaa 1164

<210> 18
<211> 358
<212> PRT
<213> Homo sapiens

<400> 18
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1 5 10 15

Gly Gln Glu Ser His Asn Ser Gly Asn Arg Ser Asp Gly Pro Gly Lys
20 25 30

Asn Thr Thr Leu His Asn Glu Phe Asp Thr Ile Val Leu Pro Val Leu
35 40 45

Tyr Leu Ile Ile Phe Val Ala Ser Ile Leu Leu Asn Gly Leu Ala Val
50 55 60

Trp Ile Phe Phe His Ile Arg Asn Lys Thr Ser Phe Ile Phe Tyr Leu
65 70 75 80

Lys Asn Ile Val Val Ala Asp Leu Ile Met Thr Leu Thr Phe Pro Phe
85 90 95

Arg Ile Val His Asp Ala Gly Phe Gly Pro Trp Tyr Phe Lys Phe Ile
100 105 110

Leu Cys Arg Tyr Thr Ser Val Leu Phe Tyr Ala Asn Met Tyr Thr Ser
115 120 125

Ile Val Phe Leu Gly Leu Ile Ser Ile Asp Arg Tyr Leu Lys Val Val
130 135 140

Lys Pro Phe Gly Asp Ser Arg Met Tyr Ser Ile Thr Phe Thr Lys Val
145 150 155 160

Leu Ser Val Cys Val Trp Val Ile Met Ala Val Leu Ser Leu Pro Asn
165 170 175

Ile Ile Leu Thr Asn Gly Gln Pro Thr Glu Asp Asn Ile His Asp Cys
180 185 190

Ser Lys Leu Lys Ser Pro Leu Gly Val Lys Trp His Thr Ala Val Thr
195 200 205

Tyr Val Asn Ser Cys Leu Phe Val Ala Val Leu Val Ile Leu Ile Gly
210 215 220

Cys Tyr Ile Ala Ile Ser Arg Tyr Ile His Lys Ser Ser Arg Gln Phe
225 230 235 240

Ile Ser Gln Ser Ser Arg Lys Arg Lys His Asn Gln Ser Ile Arg Val
245 250 255

Val Val Ala Val Phe Phe Thr Cys Phe Leu Pro Tyr His Leu Cys Arg
260 265 270

Ile Pro Phe Thr Phe Ser His Leu Asp Arg Leu Leu Asp Glu Ser Ala
275 280 285

Gln Lys Ile Leu Tyr Tyr Cys Lys Glu Ile Thr Leu Phe Leu Ser Ala
290 295 300

Cys Asn Val Cys Leu Asp Pro Ile Ile Tyr Phe Phe Met Cys Arg Ser
305 310 315 320

Phe Ser Arg Arg Leu Phe Lys Lys Ser Asn Ile Arg Thr Arg Ser Glu
325 330 335

Ser Ile Arg Ser Leu Gln Ser Val Arg Arg Ser Glu Val Leu Ile Tyr
340 345 350

Tyr Asp Tyr Thr Asp Val
355

<210> 19
<211> 2480
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (42)..(1157)

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1 5

tcc tca acc aac agt tct gtt ctc ccg tgt cct gac tac cga cct acc 104
Ser Ser Thr Asn Ser Ser Val Leu Pro Cys Pro Asp Tyr Arg Pro Thr
10 15 20

cac cgc ctg cac ttg gtg gtc tac agc ttg gtg ctg gct gcc ggg ctc 152
His Arg Leu His Leu Val Val Tyr Ser Leu Val Leu Ala Ala Gly Leu
25 30 35

ccc ctc aac gcg cta gcc ctc tgg gtc ttc ctg cgc gcg ctg cgc gtg 200
Pro Leu Asn Ala Leu Ala Leu Trp Val Phe Leu Arg Ala Leu Arg Val
40 45 50

cac tcg gtg gtg agc gtg tac atg tgt aac ctg gcg gcc agc gac ctg 248
His Ser Val Val Ser Val Tyr Met Cys Asn Leu Ala Ala Ser Asp Leu
55 60 65

ctc ttc acc ctc tcg ctg ccc gtt cgt ctc tcc tac tac gca ctg cac 296
Leu Phe Thr Leu Ser Leu Pro Val Arg Leu Ser Tyr Tyr Ala Leu His
70 75 80 85

cac tgg ccc ttc ccc gac ctc ctg tgc cag acg acg ggc gcc atc ttc 344
His Trp Pro Phe Pro Asp Leu Leu Cys Gln Thr Thr Gly Ala Ile Phe

				90				95				100					
cag	atg	aac	atg	tac	ggc	agc	tgc	atc	ttc	ctg	atg	ctc	atc	aac	gtg	392	
Gln	Met	Asn	Met	Tyr	Gly	Ser	Cys	Ile	Phe	Leu	Met	Leu	Ile	Asn	Val		
105								110				115					
gac	cgc	tac	gcc	gcc	atc	gtg	cac	ccg	ctg	cga	ctg	cgc	cac	ctg	cgg	440	
Asp	Arg	Tyr	Ala	Ala	Ile	Val	His	Pro	Leu	Arg	Leu	Arg	His	Leu	Arg		
120								125				130					
cgg	ccc	cgc	gtg	gcg	cgg	ctg	ctc	tgc	ctg	ggc	gtg	tgg	gcg	ctc	atc	488	
Arg	Pro	Arg	Val	Ala	Arg	Leu	Leu	Cys	Leu	Gly	Val	Trp	Ala	Leu	Ile		
135								140				145					
ctg	gtg	ttt	gcc	gtg	ccc	gcc	gcc	cgc	gtg	cac	agg	ccc	tcg	cgt	tgc	536	
Leu	Val	Phe	Ala	Val	Pro	Ala	Ala	Arg	Val	His	Arg	Pro	Ser	Arg	Cys		
150								155				160				165	
cgc	tac	cgg	gac	ctc	gag	gtg	cgc	cta	tgc	ttc	gag	agc	ttc	agc	gac	584	
Arg	Tyr	Arg	Asp	Leu	Glu	Val	Arg	Leu	Cys	Phe	Glu	Ser	Phe	Ser	Asp		
170								175				180					
gag	ctg	tgg	aaa	ggc	agg	ctg	ctg	ccc	ctc	gtg	ctg	ctg	gcc	gag	gcg	632	
Glu	Leu	Trp	Lys	Gly	Arg	Leu	Leu	Pro	Leu	Val	Leu	Leu	Ala	Glu	Ala		
185								190				195					
ctg	ggc	ttc	ctg	ctg	ccc	ctg	gcg	gcg	gtg	gtc	tac	tcg	tcg	ggc	cga	680	
Leu	Gly	Phe	Leu	Leu	Pro	Leu	Ala	Ala	Val	Val	Tyr	Ser	Ser	Gly	Arg		
200								205				210					
gtc	ttc	tgg	acg	ctg	gcg	cgc	ccc	gac	gcc	acg	cag	agc	cag	cgg	cgg	728	
Val	Phe	Trp	Thr	Leu	Ala	Arg	Pro	Asp	Ala	Thr	Gln	Ser	Gln	Arg	Arg		
215								220				225					
cgg	aag	acc	gtg	cgc	ctc	ctg	ctg	gct	aac	ctc	gtc	atc	ttc	ctg	ctg	776	
Arg	Lys	Thr	Val	Arg	Leu	Leu	Leu	Ala	Asn	Leu	Val	Ile	Phe	Leu	Leu		
230								235				240				245	
tgc	ttc	gtg	ccc	tac	aac	agc	acg	ctg	gcg	gtc	tac	ggg	ctg	ctg	cgg	824	
Cys	Phe	Val	Pro	Tyr	Asn	Ser	Thr	Leu	Ala	Val	Tyr	Gly	Leu	Leu	Arg		
250								255				260					
agc	aag	ctg	gtg	gcg	gcc	agc	gtg	cct	gcc	cgc	gat	cgc	gtg	cgc	ggg	872	
Ser	Lys	Leu	Val	Ala	Ala	Ser	Val	Pro	Ala	Arg	Asp	Arg	Val	Arg	Gly		
265								270				275					
gtg	ctg	atg	gtg	atg	gtg	ctg	ctg	gcc	ggc	gcc	aac	tgc	gtg	ctg	gac	920	
Val	Leu	Met	Val	Met	Val	Leu	Leu	Ala	Gly	Ala	Asn	Cys	Val	Leu	Asp		
280								285				290					
ccg	ctg	gtg	tac	tac	ttt	agc	gcc	gag	ggc	ttc	cgc	aac	acc	ctg	cgc	968	
Pro	Leu	Val	Tyr	Tyr	Phe	Ser	Ala	Glu	Gly	Phe	Arg	Asn	Thr	Leu	Arg		
295								300				305					
ggc	ctg	ggc	act	ccg	cac	cgg	gcc	agg	acc	tcg	gcc	acc	aac	ggg	acg	1016	
Gly	Leu	Gly	Thr	Pro	His	Arg	Ala	Arg	Thr	Ser	Ala	Thr	Asn	Gly	Thr		
310								315				320				325	
cgg	gcg	gcg	ctc	gcg	caa	tcc	gaa	agg	tcc	gcc	gtc	acc	acc	gac	gcc	1064	
Arg	Ala	Ala	Leu	Ala	Gln	Ser	Glu	Arg	Ser	Ala	Val	Thr	Thr	Asp	Ala		
330								335				340					
acc	agg	ccg	gat	gcc	gcc	agt	cag	ggg	ctg	ctc	cga	ccc	tcc	gac	tcc	1112	

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<210> 20
<211> 372
<212> PRT
<213> Homo sapiens

<400> 20
Met Leu Ala Asn Ser Ser Ser Thr Asn Ser Ser Val Leu Pro Cys Pro
 1             5             10            15
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```
<400> 20
Met Leu Ala Asn Ser Ser Ser Thr Asn Ser Ser Val Leu Pro Cys Pro
  1                      5                      10                      15
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Asp	Tyr	Arg	Pro	Thr	His	Arg	Leu	His	Leu	Val	Val	Tyr	Ser	Leu	Val	20	25	30
Leu	Ala	Ala	Gly	Leu	Pro	Leu	Asn	Ala	Leu	Ala	Leu	Trp	Val	Phe	Leu	35	40	45
Arg	Ala	Leu	Arg	Val	His	Ser	Val	Val	Ser	Val	Tyr	Met	Cys	Asn	Leu	50	55	60
Ala	Ala	Ser	Asp	Leu	Leu	Phe	Thr	Leu	Ser	Leu	Pro	Val	Arg	Leu	Ser	65	70	75
Tyr	Tyr	Ala	Leu	His	His	Trp	Pro	Phe	Pro	Asp	Leu	Leu	Cys	Gln	Thr	85	90	95
Thr	Gly	Ala	Ile	Phe	Gln	Met	Asn	Met	Tyr	Gly	Ser	Cys	Ile	Phe	Leu	100	105	110
Met	Leu	Ile	Asn	Val	Asp	Arg	Tyr	Ala	Ala	Ile	Val	His	Pro	Leu	Arg	115	120	125
Leu	Arg	His	Leu	Arg	Arg	Pro	Arg	Val	Ala	Arg	Leu	Leu	Cys	Leu	Gly	130	135	140
Val	Trp	Ala	Leu	Ile	Leu	Val	Phe	Ala	Val	Pro	Ala	Ala	Arg	Val	His	145	150	155
Arg	Pro	Ser	Arg	Cys	Arg	Tyr	Arg	Asp	Leu	Glu	Val	Arg	Leu	Cys	Phe	165	170	175
Glu	Ser	Phe	Ser	Asp	Glu	Leu	Trp	Lys	Gly	Arg	Leu	Leu	Pro	Leu	Val	180	185	190
Leu	Leu	Ala	Glu	Ala	Leu	Gly	Phe	Leu	Leu	Pro	Leu	Ala	Ala	Val	Val	195	200	205
Tyr	Ser	Ser	Gly	Arg	Val	Phe	Trp	Thr	Leu	Ala	Arg	Pro	Asp	Ala	Thr	210	215	220
Gln	Ser	Gln	Arg	Arg	Arg	Lys	Thr	Val	Arg	Leu	Leu	Leu	Ala	Asn	Leu	225	230	235
Val	Ile	Phe	Leu	Leu	Cys	Phe	Val	Pro	Tyr	Asn	Ser	Thr	Leu	Ala	Val	245	250	255
Tyr	Gly	Leu	Leu	Arg	Ser	Lys	Leu	Val	Ala	Ala	Ser	Val	Pro	Ala	Arg	260	265	270
Asp	Arg	Val	Arg	Gly	Val	Leu	Met	Val	Met	Val	Leu	Leu	Ala	Gly	Ala	275	280	285
Asn	Cys	Val	Leu	Asp	Pro	Leu	Val	Tyr	Tyr	Phe	Ser	Ala	Glu	Gly	Phe	290	295	300
Arg	Asn	Thr	Leu	Arg	Gly	Leu	Gly	Thr	Pro	His	Arg	Ala	Arg	Thr	Ser	305	310	315
Ala	Thr	Asn	Gly	Thr	Arg	Ala	Ala	Leu	Ala	Gln	Ser	Glu	Arg	Ser	Ala	325	330	335
Val	Thr	Thr	Asp	Ala	Thr	Arg	Pro	Asp	Ala	Ala	Ser	Gln	Gly	Leu	Leu	340	345	350

Arg Pro Ser Asp Ser His Ser Leu Ser Ser Phe Thr Gln Cys Pro Gln
355 360 365

Asp Ser Ala Leu
370

<210> 21
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<220>
<223> Description of Artificial Sequence: Primer LW1282

<400> 21
taataacctgc actgcccac

19

<210> 22
<211> 22
<212> DNA
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<220>
<223> Description of Artificial Sequence: Primer LW 1283

<400> 22
tctttccttc tcttctcact cc

22

<210> 23
<211> 32
<212> DNA
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<220>
<223> Description of Artificial Sequence: Primer LW 1373

<400> 23
gcataagctt atgctaacac tgaataaaaac ag

32

<210> 24
<211> 30
<212> DNA
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<220>
<223> Description of Artificial Sequence: Primer LW1374

<400> 24
gcactctgag tcacatgctg taggatttgg

30

<210> 25
<211> 9
<212> PRT
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<220>
<223> Description of Artificial Sequence: Peptide

<400> 25

Ala Pro Arg Thr Pro Gly Gly Arg Arg
1 5

<210> 26
<211> 32
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer LW1248

<400> 26
gcatgaattc caatatactt ccccatacct ac 32

<210> 27
<211> 30
<212> DNA
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<223> Description of Artificial Sequence: Primer LW1249

<400> 27
gcatggatcc ggaaaagaag gagaagaaag 30

<210> 28
<211> 18
<212> DNA
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<220>
<223> Description of Artificial Sequence: Primer LW1278

<400> 28
accgctgcct ttttagtc 18

<210> 29
<211> 23
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer LW1279

<400> 29
ccttctttct gggtacataa gtc 23

<210> 30
<211> 30
<212> DNA
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<220>
<223> Description of Artificial Sequence: Primer LW1405

<400> 30
aagcataaca tggatgaaac aggaaatctg 30

<210> 31
<211> 29

<212> DNA
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<220>
<223> Description of Artificial Sequence: Primer LW1406

<400> 31
aagcataact atactttaca tattttcttc 29

<210> 32
<211> 22
<212> DNA
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<220>
<223> Description of Artificial Sequence: Primer LW1280

<400> 32
tctgcacaca gctcttccat gg 22

<210> 33
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer LW1281

<400> 33
tcccttgtcc agttggttga gg 22

<210> 34
<211> 30
<212> DNA
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<220>
<223> Description of Artificial Sequence: Primer LW1385

<400> 34
gcataagctt ccatggaact tcataacctg 30

<210> 35
<211> 30
<212> DNA
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<220>
<223> Description of Artificial Sequence: Primer LW1386

<400> 35
gcatctcgag ttacccccac agcgtgcag 30

<210> 36
<211> 29
<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Primer LW1329

<400> 36

gcatctcgag tcagcctaag gttatgttg

29

<210> 37

<211> 29

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Primer LW1377

<400> 37

gcataagctt atgaacacca cagtgatgc

29

<210> 38

<211> 41

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Primer LW1387

<400> 38

gagaaatatt tttctaaaaa aacctgtttt tgcaaaaacg g

41

<210> 39

<211> 41

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Primer LW1388

<400> 39

cggtttttgc aaaaacaggt ttttttagaa aaatatttct c

41

<210> 40

<211> 30

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Primer LW1314

<400> 40

gcatgaattc ccaccttcat catctacctc

30

<210> 41

<211> 29

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Primer LW1315

<400> 41

gcattggatcc gaagaccaaa aagaccag

29

<210> 42

<211> 30

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Primer LW1326

<400> 42

gcattgaattc atgatgggtg atcccaatgg

30

<210> 43

<211> 27

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Primer LW1327

<400> 43

gcattctcgag cctagggctc tgaagcg

27

<210> 44

<211> 42

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Primer LW1415

<400> 44

ccatttatat atttctttgc atgctttcag gcattgacat cc

42

<210> 45

<211> 42

<212> DNA

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<223> Description of Artificial Sequence: Primer LW1416

<400> 45

ggatgtcaat gcctgaaagc atgcaaagaa atatatacat gg

42

<210> 46

<211> 30

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Primer LW1308

<400> 46
gcatgaattc actcacttct catctccttc 30

<210> 47
<211> 30
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<223> Description of Artificial Sequence: Primer LW1309

<400> 47
gcatggatcc aatctccttt gtcttcactc 30

<210> 48
<211> 27
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer LW1324

<400> 48
gatcggatcc atggaaagcg agaacag 27

<210> 49
<211> 35
<212> DNA
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<220>
<223> Description of Artificial Sequence: Primer LW1325

<400> 49
gatcctcgag tcaggctatg tgcttattaa acacc 35

<210> 50
<211> 29
<212> DNA
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<220>
<223> Description of Artificial Sequence: Primer LW1306

<400> 50
gcatgaattc ttctacttca tcatcctcc 29

<210> 51
<211> 28
<212> DNA
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<220>
<223> Description of Artificial Sequence: Primer LW1307

<400> 51
gcatggatcc aaaggccatc acaacaag 28

<210> 52
<211> 30
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer GV599

<400> 52
ggcagaagaa ggctattggt cttagacgag

30

<210> 53
<211> 22
<212> DNA
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<220>
<223> Description of Artificial Sequence: Primer GV600

<400> 53
ctgaaacagc gcctcagctc cc

22

<210> 54
<211> 27
<212> DNA
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<220>
<223> Description of Artificial Sequence: Primer LW1482

<400> 54
agctatggcg aactatagcc atgcagc

27

<210> 55
<211> 27
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer LW148

<400> 55
agtctcata taacacagta aggttcc

27

<210> 56
<211> 28
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer LW1310

<400> 56
gcatgaattc gcagaagaag gctattgg

28

<210> 57

<211> 29
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer LW1311

<400> 57
gcatggatcc gcagtaaaga agggttgtg

29

<210> 58
<211> 19
<212> DNA
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<220>
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<400> 58
gccattctgt ccacagaag

19

<210> 59
<211> 19
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer LW1443

<400> 59
tcagttgctg ttatggcac

19

<210> 60
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer LW1440

<400> 60
aagcggatgt ttagacctct tgtg

24

<210> 61
<211> 23
<212> DNA
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<220>
<223> Description of Artificial Sequence: Primer LW1441

<400> 61
aacagtcattg aataggaatt gag

23

<210> 62
<211> 32
<212> DNA
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Primer LW1472

<400> 62

gcatgaattc tgccatgtca atcatttctc tc

32

<210> 63

<211> 31

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Primer LW1473

<400> 63

gcatggatcc gttctgcatt ttccaggtct c

31

<210> 64

<211> 29

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Primer LW1411

<400> 64

gcatgaattc tgccaaacat catcctgac

29

<210> 65

<211> 29

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Primer LW1412

<400> 65

gcatggatcc tacacagcca caacaaccc

29

<210> 66

<211> 30

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Primer LW1448

<400> 66

aagcgtacc atgttagcca acagctcctc

30

<210> 67

<211> 29

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Primer LW1449

<400> 67
aagctctaga tcagagggcg gaatcctgg 29

<210> 68
<211> 43
<212> DNA
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<220>
<223> Description of Artificial Sequence: Primer 217A

<400> 68
taggtcggta gtcaggacac gggagaacag aactgttggt tga 43

<210> 69
<211> 52
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer 217B

<400> 69
gcccctgtgg cggttttagat ccagaatgcc cattttctgt tccatctaac ca 52

<210> 70
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer LW1480

<400> 70
ggttctacct ggacttatgg 20

<210> 71
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer LW1481

<400> 71
taatgaatga gtaagtgcc 20

<210> 72
<211> 42
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer CON103a

<400> 72
tttattaata ttggaaggga caaactggag agcacagaac at 42

<210> 73

<211> 44
<212> DNA
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<220>
<223> Description of Artificial Sequence: Primer CON103b

<400> 73
aaagccacca tggaagccat gccaaagatg atgctgggca agaa 44

<210> 74
<211> 18
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer 1332

<400> 74
tcctactgtc atgaaccc 18

<210> 75
<211> 18
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer 1333

<400> 75
cagaagaagt tgtccagc 18